Design Of Superdirective Endfire Antenna Arrays

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Summary

Efficient superdirective array functions can be generated using an optimized polynomial technique. Methods for the generation of these functions are investigated, and the effects of changing the number of elements and array length on the different array parameters are studied. Legendre polynomials have been used for the first time as optimized polynomials, and results are compared to Chebyshev polynomials where higher directivities were obtained without degradation to the array performance. An example of an 11-element two-wavelength array was used to emphasize the possible improvements from using the proposed techniques. The difficulties facing the realization of superdirectivity in practice have been analyzed for the arrays designed. The optimum separation between the array elements was identified for the endfire case